

<b>Office Action Summary</b>	<b>Application No.</b> 09/902,651	<b>Applicant(s)</b> NAKANE ET AL.
	<b>Examiner</b> David J. Steadman	<b>Art Unit</b> 1656

— The MAILING DATE of this communication appears on the cover sheet with the correspondence address —  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If no period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED. (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 16 February 2010.  
 2a) This action is FINAL.      2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,3,4,6,7,11-16 and 49-54 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) \_\_\_\_\_ is/are rejected.  
 7) Claim(s) 1,3,4,6,7,11-16 and 49-54 is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. 08/898,560.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) Notice of References Cited (PTO-892)  
 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)  
 3) Information Disclosure Statement(s) (PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_

4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date 20100401 .  
 5) Notice of Informal Patent Application  
 6) Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Status of the Application***

- [1] Claims 1, 3-4, 6-7, 11-16, and 49-54 are pending in the application.
- [2] Applicant's amendment to the claims, filed on 2/16/10, is acknowledged. This listing of the claims replaces all prior versions and listings of the claims.
- [3] Applicant's remarks filed on 2/16/10 in response to the non-final Office action mailed on 11/9/09 have been fully considered and are deemed to be persuasive to overcome at least one of the rejections and/or objections previously applied. Rejections and/or objections not reiterated from previous office actions are hereby withdrawn.
- [4] The text of those sections of Title 35 U.S. Code not included in the instant action can be found in a prior Office action.

### ***Reissue Oath/Declaration***

- [5] When any substantive amendment is filed in the reissue application, which amendment otherwise places the reissue application in condition for allowance, a supplemental oath/declaration will be required. See MPEP § 1414.01. Applicant is reminded of MPEP 1444.11, which states (in relevant part), "[a] supplemental oath/declaration need not be submitted with each amendment and additional correction. Rather, it is suggested that the reissue applicant wait until the case is in condition for allowance, and then submit a cumulative supplemental reissue oath/declaration pursuant to 37 CFR 1.175(b)(1). See MPEP § 1414.01 for a discussion of the required content of a supplemental reissue oath/declaration under 37 CFR 1.175(b)(1)."

***Claim Objection***

[6] The objection to claim 4 in the recitation of "mutant prenyl diphosphate synthase is a homodimer" is withdrawn in view of the instant amendment to claim 4 to recite, "mutant prenyl diphosphate synthase forms a homodimer".

[7] Claim 1 is newly objected to in the recitation of "A mutant prenyl diphosphate synthase having an amino acid sequence modified from the amino acid sequence of SEQ ID NO:1 by only..." In the interest of editing to improve claim form and without changing the scope of the claim, it is suggested that claim 1 be re-written as follows:

"A mutant prenyl diphosphate synthase having the amino acid sequence of SEQ ID NO:1, except:

threonine at position 78 of SEQ ID NO:1 is replaced with phenylalanine and histidine at position 81 of SEQ ID NO:1 is replaced with alanine;

threonine at position 78 of SEQ ID NO:1 is replaced with phenylalanine and histidine at position 81 of SEQ ID NO:1 is replaced with leucine;

phenylalanine at position 77 of SEQ ID NO:1 is replaced with tyrosine, threonine at position 78 of SEQ ID NO:1 is replaced with phenylalanine, and histidine at position 81 of SEQ ID NO:1 is replaced with alanine;

phenylalanine at position 77 of SEQ ID NO:1 is replaced with tyrosine, threonine at position 78 of SEQ ID NO:1 is replaced with phenylalanine, and histidine at position 81 of SEQ ID NO:1 is replaced with leucine; or

phenylalanine at position 77 of SEQ ID NO:1 is replaced with tyrosine, threonine at position 78 of SEQ ID NO:1 is replaced with serine, valine at position 80 of SEQ ID NO:1 is replaced with isoleucine, isoleucine at position 84 of SEQ ID NO:1 is replaced with leucine, and proline and serine are inserted sequentially between position 84 and position 85 of SEQ ID NO:1.

Claims 3-4, 6-7, 11-16, and 49-54 are newly objected to as being dependent upon claim 1.

***Claim Rejections - 35 USC § 112, Second Paragraph***

[8] The rejection of claim 16 under 35 U.S.C. 112, second paragraph, as being indefinite because it depends from canceled claim 2 is withdrawn in view of the instant claim amendment so that claim 16 is no longer dependent from canceled claim 2.

***Claim Rejections - 35 USC § 112, First Paragraph***

[9] The new matter rejection of claims 7 and 16 under 35 U.S.C. 112, first paragraph, is withdrawn in view of the instant amendment to claim 7 to recite, "the mutant prenyl diphosphate synthase is more thermostable at 70° C or 80° C than the wild-type geranylgeranyl diphosphate synthase of *Sulfolobus acidocaldarius*".

***Conclusion***

[10] Status of the claims:

- Claims 1, 3-4, 6-7, 11-16, and 49-54 are pending.

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- Claims 1, 3-4, 6-7, 11-16, and 49-54 are objected to for reasons set forth above.
- Claims 1, 3-4, 6-7, 11-16, and 49-54 are free of the prior art of record.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David J. Steadman whose telephone number is 571-272-0942. The examiner can normally be reached on Mon to Fri, 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Manjunath Rao can be reached on 571-272-0939. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/David J. Steadman/  
Primary Examiner, Art Unit 1656